

## REMARKS

Claims 1-23 are pending in the present application. In the Office Action, claims 1, 3, 6, 10-11, 13, and 21-22 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Russell, et al. (U.S. Patent No. 6,088,390) in view of Molson, et al (U.S. Patent No. 6,634,009). Claims 2, 7-9, and 18-20 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Russell. Claims 4-5 and 14-17 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Russell in view of Molson and further in view of Alamouti (U.S. Patent No. 5,931,965). Claims 12 and 23 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Russell in view of Molson and further in view of admitted prior art. The Examiner's rejections are respectfully traversed.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Independent claims 1, 6, and 15 set forth receiving a digital input data sequence to be coded with a code having a distance spectrum containing an infinite component that corresponds to a finite hamming weight such that the code may cause catastrophic error propagation, periodically inserting known symbols into the digital input data sequence, and encoding the digital input data sequence with the code.

Russell describes techniques for combining decision feedback equalization with forward error correction. In particular, Russell describes periodically adding a sequence of known symbols to the output of an interleaver 32, *i.e.*, the sequence of known symbols is inserted into the data stream after the data stream has been processed in the interleaver 32. See Russell, col. 3, ll. 55-65 and Figure 4. The interleaver 32 receives the data stream from a forward error correction encoder 31. See Russell, col. 3, ll. 20-33 and Figure 3. Thus, Applicant respectfully submits that Russell fails to teach or suggest periodically inserting known symbols into a digital

input data sequence and then encoding the combination of the digital input data sequence and the known symbols, as set forth in independent claims 1, 6, and 15.

Furthermore, as admitted by the Examiner, Russell fails to teach or suggest an encoder as set forth in the pending claims. The Examiner therefore relies upon Molson to describe a convolutional encoder. However, Applicant respectfully submits that Molson fails to teach or suggest periodically inserting known symbols into a digital input data sequence and then encoding the digital input data sequence, as set forth in independent claims 1, 6, and 15. Accordingly, Applicant respectfully submits that the cited references fail to teach or suggest all the limitations set forth in independent claims 1, 6, and 15.

Applicant respectfully submits that the cited references also fail to provide any suggestion or motivation to modify the prior art of record to arrive at the claimed invention. To the contrary, Russell teaches away from the present invention. As discussed above, Russell describes a periodically adding a sequence of known symbols to the output of an interleaver 32, *i.e.*, the sequence of known symbols is inserted into the data stream after the data stream has been processed in the interleaver 32. Applicant respectfully submits that this teaches away from periodically inserting known symbols into a digital input data sequence and then encoding the digital input data sequence, as set forth in independent claims 1, 6, and 15. It is by now well established that teaching away by the prior art constitutes *prima facie* evidence that the claimed invention is not obvious. *See, inter alia, In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987); *In re Hedges*, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986).

In rejecting various dependent claims, the Examiner relies upon Alamouti to describe trellis-coded modulation and also relies upon the background section of the present application to

describe convolutional codes. However, the secondary references do not remedy the aforementioned fundamental deficiencies of Russell and Molson.

For at least the aforementioned reasons, Applicant respectfully submits that the Examiner has failed to make a *prima facie* case that the present invention is obvious over the prior art of record. Applicant requests that the Examiner's rejections of claims 1-23 under 35 U.S.C. § 103(a) be withdrawn.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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